ON THE GENUS BURRETIODENDRON SENSU LATO (TILIACEAE)[1]

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Burretiodendron Rehder is a small tiliaccous genus with six species, limitedly distributed in southwestern China, northern Vietnam, Burma, and Thailand. Although much research has been carried out on this taxon since 1936, there are still a number of problems both in taxonomy and morphology requiring further clarification. The new evidence weighs against the separation of *Excentrodendron* from *Burretiodendron*. *Burretiodendron* is an isolated taxon that appears to be related to *Sicrea* Hallier f. and *Schoutenia* Korth. on the basis of pollen morphology. The distribution pattern of the group suggests that it may have originated near the China-Vietnam border.

Burretiodendron, a small genus of six species, is distributed from southwestern China through Tonkin to northern peninsular Thailand and Burma. Most species of the genus are restricted to the border area of southern China and northern Vietnam, where they grow primarily on limy soils in rain forests or dry deciduous woods.

Burretiodendron is most readily distinguished from the other genera of the Tiliaceae by its characteristic flowers and fruits, but due to the diversity of its habitat and flower types, mistakes in observation are easy to make, particularly when material is limited. Chang and Miau (1978) divided the genus into two genera, *Burretiodendron* sensu stricto and *Excentrodendron* Chang & Miau, on the basis of incomplete observations. *Excentrodendron* was described as having bisexual flowers and an evergreen habit and as being distinct from *Burretiodendron* s.s. I have checked almost all the specimens of both taxa kept in Chinese herbaria, as well as photographs of some specimens housed in other countries. The specimen cited under *Excentrodendron tonkinense* (A. Chev.) H. T. Chang & R. H. Miau as evidence of its bisexual flowers is *China–Soviet Union Expedition 2618,* from Jinping county of southwestern Yunnan; it bears juvenile fruits with several stamens at the base. Although the flower really is bisexual, the specimen is definitely *B. esquirolii.* Additional studies on flower type indicate that most species of both *Burretiodendron* s.s. and *Excentrodendron* are monoecious or dioecious, with only *B. esquirolii* being monoecious or polygamous. My observations show that *B. kydiifolium* Hsu & Zhuge retains its old leaves until the new ones unfold the following spring. It is possible that the habitats of *B. siamense* Kosterm. and *B. brilletii* Kosterm. are similar to

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Journal of the Arnold Arboretum 71: 371–380. July, 1990.

that of *B. kydiifolium* because the leaves of all three species are more or less the same (see FIGURE 1). However, habitat is unsuitable for use as a taxonomic basis because it is a character extrinsic to the plant.

The evidence provided above indicates that there are complex evolutionary relations among the taxa of the genus, and it is probably incorrect to divide these taxa into two groups. When we consider flower structure and fruit morphology, it appears that the genus should be accepted in its broad sense.

The systematic position of the genus has long been a subject of controversy. Rehder (1936) considered that the taxon did not seem to be closely related to any of the genera of the Tiliaceae or the Stereuliaceae. He thought that it was perhaps best placed in the Tiliaceae near *Luehea* Willd. because both lack androgynophores and have five bundles of stamens, although they differ markedly in flower sex, sepals, and fruits. Kostermans (1961) believed the genus to be most closely allied to *Colona* Cav. because both have a winged septicidal capsule. *Craigia* W. Smith & W. E. Evans, usually placed in the Sterculiaceae, was considered by Chang and Miau (1978) to be most closely related to *Burretiodendron* s.s. and *Excentrodendron* and had been included in their new subfam. Excentrodendroideae. In Hutchinson's (1967) system *Burretiodendron* was treated as one of the six genera under the tribe Enteleeae, based on the stamens all bearing fertile anthers and the fruits being capsules, but this is apparently not so.

The five-winged capsules of *Craigia* resemble the fruits of *Burretiodendron*. For this reason the two genera are often confused; for example *Craigia yunnanensis* has been misidentified as *B. combretoides* Chun & How (Chun & How, 1956) and *B. yunnanense* Kosterm. (Kostermans, 1961). *Craigia yunnanensis* can be most readily distinguished from *Burretiodendron* spp. by its petaloid staminodes and its lack of petals. I have examined the fruits of *Craigia yunnanensis* carefully. The species does have a loculicidal capsule rather than a septicidal one, which can be seen in the original drawing in Smith and Evans (1921). Evidence collected from palynology and wood anatomy also shows that the two groups have few similarities.

Burretiodendron differs from the other genera of tribe Enteleeae in having winged fruits that divide septicidally into five cocci. It differs markedly from *Colona* in having slender-clawed petals without a glandular portion at the base, and stamens connate into five bundles at the base.

So far the pollen morphology of over forty genera in the Tiliaceae has been studied by scanning electron microscopy. I have examined the pollen grains of several species of *Burretiodendron* under the SEM and have found three pollen patterns in this group: *B. hsienmu* with globular, panaperturate, coarsely reticulate grains (see FIGURE 2e); *B. esquirolii* with globular, panaperturate, papillate, echinate ones (see FIGURE 2b); and *B. kydiifolium* with oblate, monoporate, corrugate ones not previously recorded for the family (see FIGURE 2a). If palynology is considered, *Burretiodendron* seems to be more closely allied to *Schoutenia* Korth. and *Corchoropsis* Sieb. & Zucc. (see FIGURE 2). Morphologically it resembles *Schoutenia* and *Sicrea* Hallier f. in having an oblong, basifixed anther and two ovules in each locule and is much less similar to *Corchoropsis*. The latter is considered by many to be most closely related to

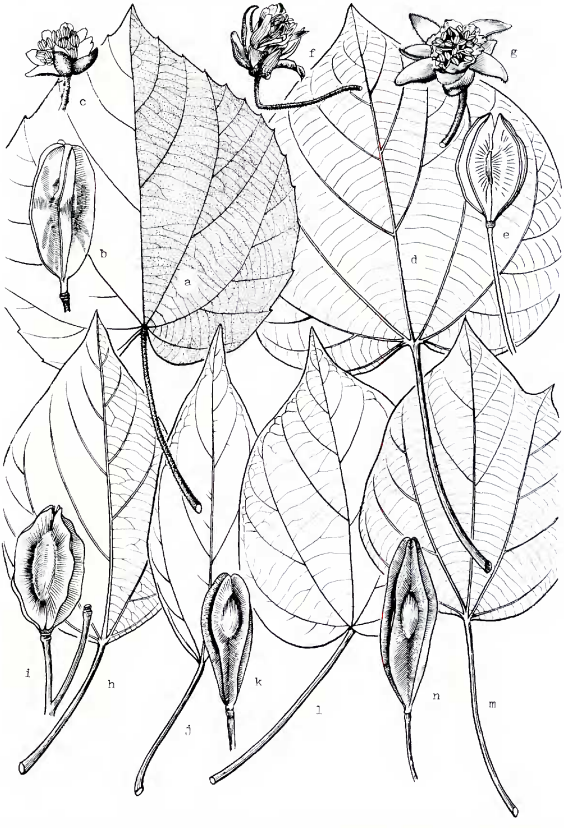

FIGURE 1. a–c, *B. esquirolii*: a, leaf; b, fruit; c, staminate flower. d–g, *B. kydifolium*: d, leaf; e, fruit; f, carpellate flower; g, staminate flower. h, i, *B. hsienmu*: h, leaf; i, fruit. j, k, *B. obconicum*: j, leaf; k, fruit. l, *B. brilletii*, leaf. m, n, *B. siamense*: m, leaf; n, fruit.

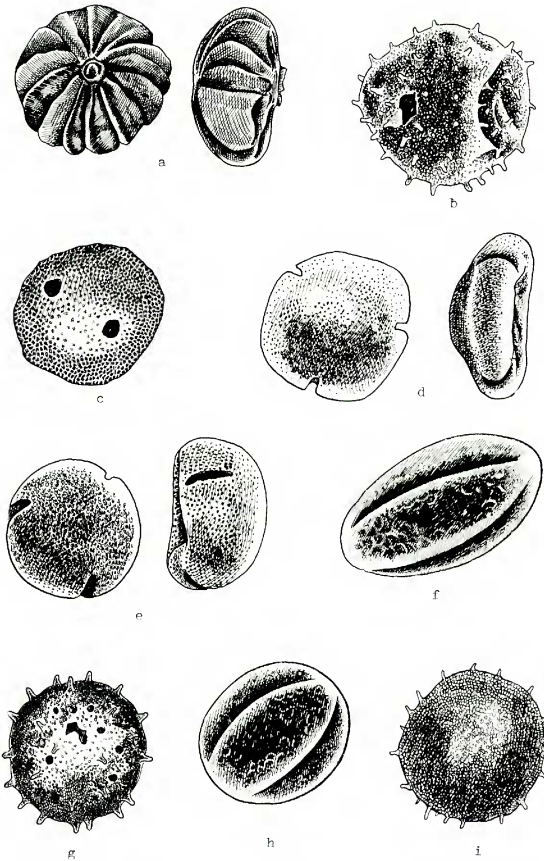

FIGURE 2. Pollen grains: a, *Burretiodendron kydiifolium*; b, *B. esquirolii*; c, *B. hsienmu*; d, *Tilia tuan* Szyszyl.; e, *Craigia yunnanensis* W. Smith & W. E. Evans; f, *Colona floribunda* Craib; g, *Corchoropsis crenata* Sieb. & Zucc.; h, *Luehea speciosa* Willd.; i, *Schoutenia ovata* Korth.

the Sterculiaceae. According to Erdtman's (1952) description, *Sicrea* is also similar to *Burretiodendron* in having globular, panaperturate pollen. The palynology hints that the systematic position of *Burretiodendron* may be near *Sicrea* and *Schoutenia*. Further studies will be necessary to resolve this question.

Five species of *Burretiodendron* have been reported from the border area between China and Vietnam. These exhibit almost all of the typical features of the group: for example, *B. kydiifolium* has the staminodes and the solitary carpellate flowers; *B. esquirolii*, the gynophore, the glandular sepals, and the two bracteoles enveloping a unisexual or bisexual flower bud; and *B. hsienmu*, the glands on the nerve axils and the three bracteoles enveloping a unisexual bud. Only one species, *B. siamense*, has a disjunct distribution, occurring in northern peninsular Thailand and the Mergui Archipelago of Burma. It therefore seems possible that *Burretiodendron* was derived in the border area between China and Vietnam.

Both *Burretiodendron hsienmu* and *B. kydiifolium* produce a very hard wood that can be used in building houses and boats. The most famous chopping blocks in the Kwangdong and Hong Kong regions are made of the "hsienmu" wood. Today the lumber resources of the genus are limited, and some species have been listed in the state catalogue of rare and endangered plants.

Burretiodendron Rehder, J. Arnold Arbor. **17:** 47. 1936. *Parapentace* Gagnep. Bull. Soc. Bot. France **90:** 70. 1943, *nomen nudum*. *Excentrodendron* H. T. Chang & R. H. Miau, Acta Sci. Nat. Univ. Sunyatsen **1978**(3): 21. 1978. TYPE SPECIES: *B. esquirolii* (Léveillé) Rehder.

Trees with leaves concentrated at ends of branchlets. Leaves alternate, simple; petiole usually long and slender, slightly swollen toward apex; stipules early caducous; blade palmati- or triplinerved, sometimes trilobate at apex, symmetrical or asymmetrical at base, entire. Flowers unisexual and sometimes bisexual (and plants polygamous), solitary or in small cymes, racemes, or panicles; bracteoles 2 or 3 enveloping flower bud, caducous; sepals 5, free, valvate, with or without glandular part inside at base; petals 5, free, more or less unguiculate. Staminate flowers with stamens numerous, connate at base into 5 phalanges; anthers basifixed, linear-oblong, bilocular, longitudinally dehiscent; staminodes absent or rarely present; ovary reduced. Carpellate and bisexual flowers with ovary 5-angular, 5-locular, 2-ovular in each locule; styles 5, free, clavate. Capsules 5-winged, splitting septicidally into 5 cocci. Seeds without endosperm; cotyledons large, foliaceous.

KEY TO THE SPECIES OF BURRETIODENDRON

A. Leaves with upper surface glabrous, margin entire but with apex sometimes 3-lobed; flowers unisexual, staminate ones in small panicles, carpellate ones solitary or in racemules; ovaries sessile.
  B. Leaves coriaceous or subcoriaceous, 3- to 5-basinerved; sepals usually glandular at base.
    C. Leaves oblong-elliptic or subrhomboid, acute or rotundate at base, 3-basinerved, nerve axils glandular.

D. Capsules 3–4 cm long, ellipsoid. ..... 1. *B. hsienmu.*
D. Capsules ca. 5 cm long, obconical. ..... 2. *B. obconicum.*
C. Leaves broadly ovate, subcordate or truncate at base, 5-basinerved, nerve axils eglandular. ..... 3. *B. brilletii.*
B. Leaves chartaceous, 5- to 9-basinerved; sepals eglandular at base.
E. Bracteoles 3; staminodes 5, linear; leaves cordate at base, 7- to 9-basinerved. ..... 4. *B. kydiifolium.*
E. Bracteoles 2; staminodes absent; leaves truncate or subcordate at base, 5- to 7-basinerved. ..... 5. *B. siamense.*
A. Leaves with both surfaces shortly stellate-pilose, margin denticulate; plants polygamous, flowers in cymes; ovaries stipitate. ..... 6. *B. esquirolii.*

1. **Burretiodendron hsienmu** W. Y. Chun & F. C. How, Acta Phytotax. Sin. **5:** 9. *t. 3.* 1956. *Excentrodendron hsienmu* (W. Y. Chun & F. C. How) H. T. Chang & R. H. Miau, Acta Sci. Nat. Univ. Sunyatsen **1978**(3): 23. 1978. TYPE: China, Kwangsi [Guangxi] Prov., Lungchow [Longzhou], Wu Lien Hsiang, April, 1955, *C. F. Liang 31523b* (holotype, SCBI!).
FIGURE 1h, i.

Pentace tonkinensis A. Chev. Bull. Econ. Indoch. **20:** 803. 1918, *nomen nudum*; Kostermans, Reinwardtia **5:** 239. 1960. *Parapentace tonkinensis* (A. Chev.) Gagnep. Bull. Soc. Bot. France **90:** 70. 1943. *Burretiodendron tonkinense* Kosterm. Reinwardtia **5:** 239. 1960. TYPE: Vietnam, Hoa-binh, *Brillet 8* (P; photo!).
Excentrodendron rhombifolium H. T. Chang & R. H. Miau, Acta Sci. Nat. Univ. Sunyatsen **1978**(3): 23. 1978. TYPE: China, Guangxi Prov., Longzhou, Qing-shan Xiang, *S. Q. Chen 11852* (holotype, SCBI!; isotype, IBG!).

Tree up to 40 m high. Leaves with petiole 4–10 cm long; blade orbicular-ovate to subrhomboid, 10–18 by 7–12 cm, long-acuminate at apex, acute or rotundate at base, coriaceous, glabrous, 3-basinerved, glandular in nerve axils. Flowers imperfect, staminate ones 6 to 12 in small panicles, carpellate ones solitary or 2 or 3 per racemule; bracteoles 3, caducous; sepals lanceolate, ca. 1–1.5 cm long, densely stellate-pilose, glandular inside at base; petals spathulate, clawed, about as long as sepals; stamens 25 to 35. Capsules ellipsoid, 3–4 cm long, glabrous.

DISTRIBUTION. China (Yunnan, Guangxi) and northern Vietnam.

ADDITIONAL SPECIMENS EXAMINED. **China.** YUNNAN PROV.: Hekou, *R. Zhuge 10276, 10277* (both SWFC), *C. J. Wang 1023* (SWFC); Jinping, *China–Soviet Union Exped. 1073* (KUN, PE); Malipo, *R. Zhuge 10274* (SWFC), *C. J. Wang 807* (SWFC). GUANGXI PROV.: Longzhou, *Y. K. Li 00243* (IBG, PE); Jinxi, *Z. M. Li & Z. J. Li 1368* (IBG); Ningming, *S. K. Lee 200409* (IBG); Baise, *Baise Exped. 01960* (PE); Debao, *Z. Y. Wei 00244* (IBG); Longan, *J. X. Zhong s.n.* 25 Feb. 1955 (SCBI). **Vietnam:** near Lao Cai, *China-Vietnam Exped. 717* (KUN).

Pentace tonkinensis, proposed by Chevalier in 1918, was briefly described in French. In 1943 the species was transferred by Gagnepain to his new genus *Parapentace,* which was merged by Kostermans in 1961 into *Burretiodendron*; there, Kostermans recognized it to be conspecific with *Burretiodendron hsienmu.* However, in 1978 Chang and Miau distinguished the species from *B. hsienmu* again, placing both in the new genus *Excentrodendron.* They believed

B. tonkinense to be characterized by fewer flowers in a raceme and a nodiferous pedicel, and *B. hsienmu* by numerous flowers in a panicle and an enodal pedicel. When I examined specimens of the two species in several larger Chinese herbaria, I found that the floriferous specimens were always identified as *B. hsienmu* and the fructiferous ones as *B. tonkinense*. Field observations revealed that staminate trees of *B. hsienmu* bear six to twelve flowers in small panicles, while carpellate trees have one to three flowers per raceme; the nodes on the pedicel are merely the cicatrices of the caducous bracteoles, as becomes apparent with the growth of the fruit. Furthermore, in Gagnepain's original description *Parapentace tonkinensis* was noted as "fl. ♂ groupées en glomérules de 10 environ." For this reason we can be sure that *B. tonkinense* only represents the carpellate trees of *B. hsienmu*. Although *B. hsienmu* was proposed later than *Parapentace tonkinensis*, it is considered to be the correct name of this species because *Parapentace* is an invalid name without Latin description or diagnosis.

Excentrodendron rhombifolium, reported from the same area as *Burretiodendron hsienmu*, was based on a single specimen with rhomboid leaves. Since I have collected similar leaves from trees of *B. hsienmu*, and the rhomboid leaf is only one of various leaf shapes characteristic of the species, it is better to reduce *E. rhombifolium* to synonymy under *B. hsienmu*.

2. **Burretiodendron obconicum** W. Y. Chun & F. C. How, Acta Phytotax. Sin. **5**: 11. *t. 4*. 1956. *Excentrodendron obconicum* (W. Y. Chun & F. C. How) H. T. Chang & R. H. Miau, Acta Sci. Nat. Univ. Sunyatsen **1978**(3): 24. 1978. TYPE: China, Guangxi Prov., Longzhou, Wu-lian Hsiang, July 1955, *C. F. Liang 31537* (holotype, SCBI!; isotype, IBG!). FIGURE 1j, k.

Tree 20 m tall. Leaves with petiole 4–8 cm long; blade elliptic to oblong-elliptic, 9–15 by 4.5–5.5 cm, long-acuminate at apex, acute at base, subcoriaceous, glabrous, 3-basinerved, nerve axils glandular. Flowers unknown. Infructescences racemose or dichotomous. Capsules obconical, ca. 5 cm long, glabrous.

DISTRIBUTION. China (Guangxi).

Burretiodendron obconicum is very similar to *B. hsienmu* in having three-basinerved, glandular, coriaceous leaves but differs in having obconical capsules and oblong-elliptic leaves. It is confined to southern Guangxi Province close to the border of China and Vietnam.

3. **Burretiodendron brilletii** Kosterm. Reinwardtia **5**: 240. 1960. *Parapentace brilletii* Gagnep. Bull. Soc. Bot. France **90**: 71. 1943. TYPE: Vietnam, Hoa-binh, *Brillet 19* (holotype, P; isotype, BO). FIGURE 1l.

Tree; branchlets densely and minutely gray-stellate-tomentose. Leaves with petiole slender, 1.5–4 cm long, densely minutely stellate-pilose; blade broadly ovate to suborbicular, 7–11 by 4–10 cm, acuminate at apex, subcordate or truncate at base, subcoriaceous, both surfaces densely reticulate, 5-basinerved, nerve axils eglandular but with scattered stellate hairs present on nerves below. Inflorescences axillary fascicles. Staminate flowers in lax panicles; sepals lan-

ceolate, glabrous inside with small nectariferous basal part; petals spathulate, slightly longer than sepals; stamens 15 to 18; pistillode ovoid, 1 mm in diameter, stellate-pilose, apex tricuspidate. Carpellate flowers and fruits unknown.

DISTRIBUTION. Northern Vietnam.

ADDITIONAL SPECIMEN EXAMINED. **Vietnam:** Tudin, *Nghien s.n.* 29 Jan. 1961 (KUN).

Burretiodendron brilletii, first reported by Gagnepain in 1943 under *Parapentace* (based on a specimen bearing staminate flowers), is still poorly known. It is rare and confined to northern Vietnam. It differs from the other species of *Burretiodendron* in having broadly ovate to suborbicular, five-basinerved leaves with the base subcordate and the nerve axils eglandular.

4. **Burretiodendron kydiifolium** Hsu & Zhuge, sp. nov. FIGURE 1d–g.

Haec species a speciebus ceteris generis bene distincta; differt a *B. esquirolii* Rehder foliis glabris, bracteolis 3, floribus ♂ staminodiis 5, linearibus, ovariis sessilibus, a *B. hsienmu* foliis crasso-chartaceis, basi late cordatis, 7–9 palminervatis.

Tree up to 15 m high; branchlets densely brown-stellate-lepidote. Leaves with petiole 3.5–10 cm long, glabrous; blade chartaceous, suborbicular, 7–15 by 7–13 cm, sometimes 3-lobed at apex, cordate at base, entire, 7- to 9-basinerved. Staminate flowers 3 to 7 per raceme, carpellate ones solitary or rarely 2 or 3 per raceme; bracteoles 3 enveloping flower bud; sepals oblong-elliptic, 6–8 cm long, not glandular inside near base; petals flabelliform, apex praemorse, base cuneate; stamens 25 to 30; staminodes 5, linear, longer than stamens; ovary 5-angular with 5 free clavate styles. Capsule ellipsoid, 3–4 cm long.

TYPE. China, Yunnan Prov., valley of Yuanjiang River, 480 m alt., 12 May 1986, *R. Zhuge 10418* (holotype, SWFC; isotype, KUN).

DISTRIBUTION. Known only from Yunnan, China.

ADDITIONAL SPECIMENS EXAMINED. **China.** YUNNAN PROV.: valley of Yuanjiang R., 820 m alt., *R. Zhuge 90669, 90670* (both SWFC).

Burretiodendron kydiifolium corresponds to a set of flowering and fruiting specimens that I collected from the valley of the Yuanjiang River in Yunnan Province. It resembles *B. siamense* somewhat in having chartaceous, broadly ovate, five-basinerved leaves that are often three-lobed at the apex, but the two species are quite distinct. The flowers of *B. kydiifolium* have three (vs. two) bracteoles and five staminodes.

5. **Burretiodendron siamense** Kosterm. Reinwardtia **6:** 4. *t. 2.* 1961. TYPE: northern peninsular Siam, Khao Chawng Kachok, common in deciduous forest, *Thaew Sinthiphongse 27* (holotype, BKF). FIGURE 1m, n.

Burretiodendron esquirolii auct. non Rehder: Smitin. Nat. Hist. Soc. Bull. Siam **19:** 88. 1958.

Tree 8–12 m tall; branchlets densely very shortly brown-stellate-lepidote-pilose. Leaves with petiole up to 5 cm long, glabrous; blade broadly ovate, 8–15 by 5.5–10 cm, sometimes 3-lobed at apex, truncate or subcordate at base, entire, chartaceous, 5- to 7-basi-nerved, glabrescent. Flowers solitary, subtended by 2 large, broadly ovate bracteoles; sepals lanceolate-ovate; petals broadly elliptic, slightly longer than sepals, membranous; stamens numerous. Capsules oblong-ellipsoid, 5–6 cm long, glabrous.

DISTRIBUTION. Northern peninsular Thailand, Mergui Archipelago of Burma.

Kostermans' (1961) original description of *Burretiodendron siamense* was based on fruiting specimens collected from northern peninsular Thailand and the Mergui region of Burma. The description of the flowers was added in 1965. This species can be readily distinguished from the others in the genus by its solitary flower with two bracteoles and its much bigger fruits.

6. **Burretiodendron esquirolii** (Lévl.) Rehder, J. Arnold Arbor. **17:** 48. *t. 178.* 1936. *Pentace esquirolii* Léveillé, Repert. Sp. Nov. **10:** 147. 1911. TYPE: China, Kweichow [Guizhou] PROV., west of Lo-fou, Nov. 1905, *J. Cavalerie 2648* (holotype, E; photo and fragment of holotype, A).

FIGURE 1a–c.

Eriolaena esquirolii Léveillé, Fl. Kouy-Tchéou, 405. 1916. TYPE: China, Kweichow [Guizhou], Yang-ly, Aug. 1911, *J. Esquirol 2717* (holotype, E; photo and fragment of holotype, A).

Burretiodendron longistipitatum R. H. Miau, Acta Sci. Nat. Univ. Sunyatsen **1978**(3): 25. 1978. TYPE: China, Guangxi PROV., Long-lin, 26 Oct. 1957, *C. C. Chang 4755* (holotype, IBG!).

Tree up to 20 m high; branchlets densely minutely stellate-pilose. Leaves with petiole 3–9 cm long, slender, denscly stellate-pilose; blade ovate to subrotundate, 10–25 by 8–20 cm, acute at apex and often 3-lobed, cordate at base, denticulate, chartaceous, palmatcly 5- to 7-nerved, both surfaces densely stellate-pilose. Plants polygamous, flowers 3 to 11 in small cymes; bracteoles 2, caducous, broadly ovate to elliptic; scpals ovate-elliptic, glabrous inside with 1 or 2 basal, oblong, elevated, glandular areas; petals broadly obovate, slightly longer than sepals, margin ciliolate; stamens ca. 30; ovary ovoid, 5-angular, with 5 clavate styles and gynophore. Capsules oblong in outline, 4–5 cm long.

DISTRIBUTION. China (southeastern Yunnan, southern Guizhou, and Guangxi provinces).

ADDITIONAL SPECIMENS EXAMINED. **China.** YUNNAN PROV.: Yuanjiang, *R. Zhuge 90607, 90608* (both SWFC), *G. D. Tao 38162, 38164* (both YTBG); Shibing, *Yunnan Forestry Institute 77153* (YNFI); Jinping, *China–Soviet Union Exped. 2617, 2618* (both KUN). GUIZHOU PROV.: Ceheng, *Z. Y. Chao 1208* (KUN, PE); Luodian, *Z. J. Luo 2661, 3667* (both GZFI); Wengan, *Li-po Exped. 1930* (GZFI). GUANGXI PROV.: Longlin, *C. C. Chang 10236* (IBG, SCBI); Tiane, *Z. T. Li 601284* (IBG).

The first species of *Burretiodendron,* originally described as *Pentace esquirolii,* was based on three specimens collected by J. Cavalerie and J. Esquirol at Lofou and Yangli, Guizhou Province, China. *Cavalerie 2648* was the holotype of the

species. *Esquirol 817* and *2717* were both cited in *Flore du Kouy-Tchéou* (Léveillé, 1915) under *P. esquirolii*, and the latter again under *Eriolaena esquirolii*. They were all recognized by A. Rehder (1936) to be different from *Pentace* and other genera of the Tiliaceae in having unisexual flowers, five-winged fruits dehiscing into free cocci, and sepals with glands. Within *Burretiodendron*, *B. esquirolii* is easily distinguished from the other species by its pubescence and its longer fruit pedicels.

Burretiodendron longistipitatum was based on a single specimen with fruit pedicels a little longer than those of *B. esquirolii*. This is quite a variable character, and the same variability is also found in specimens of *B. esquirolii*. This species is therefore reduced to synonymy under *B. esquirolii*.

EXCLUDED SPECIES

Burretiodendron umbellatum Kosterm., which was reported in 1962 from Thailand, was regarded as a doubtful species by Chang and Miau in 1978. As early as 1965 Kostermans, relying on additional and better materials from the same location, had revealed that the species was identical with *Mansonia gagei* Prain (Sterculiaceae).

ACKNOWLEDGMENTS

I would like to thank my advisers, professors Hsu Yung-chun (Southwest Forestry College, Kunming, China) and Chen Cheih (Kunming Botanical Institute, Academia Sinica) for comments and criticisms on the contents of this paper; Dr. J. E. Vidal (Muséum National d'Histoire Naturelle, Laboratoire de Phanérogamie, Paris) for kindly sending photographs of specimens; and Mr. Li Nang (Southwest Forestry College, Kunming) for the artwork.

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